What Factors affect Family Practitioners in the Prescription of Antibiotics for Respiratory Tract Infections in Malta?

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MD, MSc in Family Medicine
Introduction

- Respiratory tract infections account for around 18% of reasons for encounter. (Soler D 2000, Transhis 2005)

- **Increasing antibiotic resistance:** (Infection Control Unit MDH)
  - Increasing resistance of *Streptococcus pneumonia* to macrolides and quinolones.
  - *Haemophilus influenza* highly resistant to macrolides.
  - Moraxella catharralis shows 80% sensitivity to penicillin.

- **Antibiotic over-prescription and inappropriate prescribing.**

- **Family doctors at the front-line.**
Antibiotics
DON'T WORK
ON Colds...

... OR MOST COUGHS AND SORE THROATS.
Aim & Objectives

- Show how the prescription of antibiotics in respiratory tract infections by family physicians in Malta is affected by family physician characteristics, patient characteristics and the different clinical situations.
- Analysis of how family physicians evaluate respiratory tract infections and how does this differ amongst different family physicians.
- Identification of which practitioner characteristics are associated with prescription of antibiotics for respiratory tract infections.
- Identification of patient characteristics influencing in family practitioners’ prescribing antibiotics in respiratory tract infections.
- Analysis of the different clinical situations and how these influence family physicians in prescribing antibiotics for respiratory tract infections.
Methodology

- Research using journals, books and the internet.

- The participants
  - All the family practitioners and all the general practitioner trainees in Malta.
  - Practicing of family medicine and practicing in Maltese islands

- Contact details
  - General Practitioner Vocational Training
  - European Union Medical Practitioner List
Methodology – The Questionnaire

• Section 1: Profession and Practice

<table>
<thead>
<tr>
<th>Demographic Details</th>
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</thead>
<tbody>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Nationality</td>
</tr>
<tr>
<td>Years of practice</td>
</tr>
<tr>
<td>Type of practice</td>
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<tr>
<td>Area of practice</td>
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<tr>
<td>Visits by medical representatives</td>
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<tr>
<td>Consultation of national guidelines</td>
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</tbody>
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• Section 2:
  • Knowledge of respiratory tract infections and their treatment
  • Prescription of new antibiotics
  • Delayed prescription
Methodology – The Questionnaire

Section 3: Patient Characteristics

<table>
<thead>
<tr>
<th>Gender</th>
<th>Socioeconomic</th>
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<tbody>
<tr>
<td>Male</td>
<td>Unemployed</td>
</tr>
<tr>
<td>Female</td>
<td>Illiterate</td>
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<tr>
<td>Pregnant</td>
<td>Pink card</td>
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<tr>
<td>Breast-feeding</td>
<td>Carer</td>
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<table>
<thead>
<tr>
<th>Age</th>
<th>Vocational</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Patient</td>
</tr>
<tr>
<td>Nationality</td>
<td>Clinical</td>
</tr>
<tr>
<td>Occupation</td>
<td>Time</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Clinical</th>
<th>Patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking</td>
<td>Re-attends</td>
</tr>
<tr>
<td>Chronic lung condition</td>
<td>Difficult</td>
</tr>
<tr>
<td>Other chronic condition</td>
<td>Requests</td>
</tr>
<tr>
<td>Poly-pharmacy</td>
<td></td>
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</tbody>
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<table>
<thead>
<tr>
<th>Occupation</th>
<th></th>
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<tbody>
<tr>
<td>Infection transmission</td>
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<tr>
<td>Occupational hazards</td>
<td></td>
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<tr>
<td>Public safety</td>
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</tbody>
</table>
Methodology – The Questionnaire

- Section 4: Clinical Characteristics
  - Ear ache
  - Nasal discharge
  - Headache
  - Throat pain
  - Cough
  - Fever
  - Others
    - Localised coarse crepitations
    - Tachypnoea
    - Wheezing
    - Enlarged cervical lymph nodes
Methodology

- Autumn
- Package posted:
  - Introductory letter
  - Questionnaire
  - Self-addressed envelope
- Peer review
- Board of Ethics approval
Results and Analysis

- 326 family practitioners + 22 trainees
- 13 not meeting inclusion criteria
- No mailing address for 9 participants
- Response rate 61% (199 replies)

- Chi-squared testing
- Null Hypothesis
  - There is no difference in the characteristic frequencies for that particular family doctor group.
  - Acceptance of hypothesis if p-value >0.05
Results – Family Doctor Characteristics

Years since Registration

Gender
- Male: 28%
- Female: 72%

Nationality
- Maltese: 99%
- Foreign: 1%

Percentage Frequency

0-10 yrs
11-20 yrs
21-30 yrs
>30 yrs
No Answer
Results – Family Doctor Characteristics

Type of Practice
- Solo: 63%
- Group: 35%
- No Answer: 2%

Guidelines Consultation
- Never: 2%
- 1-5 times: 24%
- >5 times: 74%

Practice Area
- Rural: 17%
- City: 46%
- Both: 37%
- No Answer: 6%

Medical Representative Visits
- Never: 54%
- 1-5 times: 40%
- >5 times: 6%
Results – Family Doctor Characteristics

**Knowledge RTIs**

- Scale 1: 0%
- Scale 2: 10%
- Scale 3: 20%
- Scale 4: 50%
- Scale 5: 70%

**Prescribe New Antibiotics**

- Scale 1: 5%
- Scale 2: 15%
- Scale 3: 35%
- Scale 4: 20%
- Scale 5: 10%

**Knowledge RTI Treatment**

- Scale 1: 0%
- Scale 2: 10%
- Scale 3: 20%
- Scale 4: 50%
- Scale 5: 70%

**Delayed Prescription**

- Scale 1: 5%
- Scale 2: 15%
- Scale 3: 35%
- Scale 4: 20%
- Scale 5: 10%
Results – Patient Characteristics

1. Younger and older patients
2. Pregnant and breast feeding patients
3. All occupational factors
4. Difficult patients or re-attendance with same problem
5. Smoking habit
6. Chronic medical conditions
Results – Clinical Characteristics

1. Signs of otitis externa / media
2. Greenish nasal discharge (moderate)
3. Frontal percussion tenderness
4. Signs of pustural tonsillitis
5. Cough productive of greenish sputum
6. >100°F fever
7. Localised crepitations
8. Tachypnoea
9. Palpable cervical lymph nodes
### Analysis

<table>
<thead>
<tr>
<th>Age</th>
<th>Gender</th>
<th>Occupational</th>
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</thead>
<tbody>
<tr>
<td>Female doctors</td>
<td>Low guidelines consultation</td>
<td>&gt;20 years of practice</td>
</tr>
<tr>
<td>&lt;20 years or practice</td>
<td>Low knowledge RTIs</td>
<td>Low guidelines consultation</td>
</tr>
<tr>
<td>Low knowledge RTIs</td>
<td></td>
<td>Prescribe new antibiotic</td>
</tr>
</tbody>
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<tr>
<th>Difficult / Re-attendance</th>
<th>Smoking</th>
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<tbody>
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<td>&lt;20 years or practice</td>
<td>Female doctors</td>
</tr>
<tr>
<td>Low guidelines consultation</td>
<td>Rural areas</td>
</tr>
<tr>
<td>Visits by medical reps</td>
<td>Low knowledge RTIs</td>
</tr>
<tr>
<td>Do not prescribe new antibiotic</td>
<td></td>
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Family doctors mostly affected by these patient characteristics
Analysis

- Clinical symptoms not indicative of bacterial infection were found to affect more:
  - Female practitioners
  - Practitioners who scaled low or high their knowledge
  - Practitioners who were willing or unwilling to prescribe a new antibiotic
  - Doctors who disagree with delayed prescribing
Conclusions

- Similar results as international studies
- Majority never consult guidelines.
- Cautious with prescription of new antibiotics.
- Willing to perform delayed prescribing.
- Family doctors are appropriately cautious in prescribing antibiotics to certain groups of patients.
- Sensitive to occupational factors but less so to socioeconomic aspects.
- Not affected by direct request of antibiotic but affected by re-attendance with same problem and by difficult patients.
- Safe from the effect of time constraint.
- Family doctors not affected by clinical situations not indicative of bacterial infections.
Recommendations

- Subjective assessment
  - Observational or clinical study for objective assessment.

- Further studies needed to:
  - Quantitatively assess number of prescriptions and the number and type of respiratory infections treated with antibiotics.
  - Assess patient’s knowledge on infections and antibiotics.
  - Assess patient’s satisfaction and expectations.

- Action plan:
  - Increase guidelines consultation.
  - Educational interventions aimed at those at risk of inappropriate antibiotic prescriptions.
  - Potential of medical representatives
"It's a prescription for one of those new super-antibiotics. You won't just get better, you'll get even."